DOCUMENT RESUME

ED 480 981 SE 068 241

AUTHOR	Bundschu-Mooney, Elizabeth
TITLE	School Garden Investigation: Environmental Awareness and Education.
PUB DATE	2003-05-00
NOTE	39p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	Elementary Secondary Education; *Gardens; Science Activities; *Science Education History; Science Instruction; Student Interests

ABSTRACT

This paper examines the available literature on the inclusion of gardens within the academic curriculum at the elementary school level. In addition, it attempts to link the need students have for a connection to their environment with a school garden and explores the benefits of integrating curriculum to enhance learning. This paper attempts to show a historical precedent in the 19th century school curriculums that included school gardens and demonstrates a connection with the current reinvention and reintroduction movement, which is encouraging gardens back into schoolyards. The ultimate goal of this paper would be to advocate the positive effects of reinforcing the weaving of the wonders of the natural world into the fabric of today's educational system. In a world increasingly technologically obsessed and dependent, children more than ever need to experience the rhythms of nature for intellectual and spiritual growth and well being. This paper can point the reader to ideas and sources that will inspire further investigation and implementation in other schools and communities. (Author)

Reproductions supplied by EDRS are the best that can be made
from the original document.

SE SETR 0155

ED 480 981

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

E Bundschu Mooney

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Title Page

School Garden Investigation: Environmental Awareness and Education

Elizabeth Bundschu-Mooney

Division of Education

School of Business, Education, and Leadership

Dominican University of California

San Rafael, CA

May 2003

BEST COPY AVAILABLE

SE068241

Abstract

This paper examines the available literature on the inclusion of gardens within the academic curriculum at the elementary school level. In addition, it attempts to link the need students have for a connection to their environment with a school garden and explores the benefits of integrating curriculum to enhance learning.

This paper attempts to show a historical precedent in the 19th century school curriculums that included school gardens and demonstrates a connection with the current reinvention and reintroduction movement, which is encouraging gardens back into schoolyards. The ultimate goal of this paper would be to advocate the positive effects of reinforcing the weaving of the wonders of the natural world into the fabric of today's educational system.

In a world increasingly technologically obsessed and dependent, children more than ever need to experience the rhythms of nature for intellectual and spiritual growth and well being. This paper can point the reader to ideas and sources that will inspire further investigation and implementation in other schools and communities.

Acknowledgements

In the fall of 2002, I participated in "TAKING ROOT," a workshop in school gardens. From that workshop, the idea for this paper was developed. I would like to thank Debi Tibb from "The Gardens of Heather Farm" for the inspiration she gave me to pursue further investigations into various aspects of school gardens. Debi was instrumental in helping me formulate my idea and was a great resource for materials.

I would also like to thank Dr. Madalienne Peters for her dedication to her students at Dominican University of California and for her perseverance in helping me see this project through. Additionally, I would like to thank all of the inspirational professors that I have encountered along my educational journey, from Dominican University of California, the University of California at Berkeley, and College of Marin.

Finally, none of this would be possible if not for the support of my family, my always-supportive husband, Robert, and my two children, Jacob and Emma. I have sacrificed many things to accomplish my goals, but nothing more than sacrificing time not spent with my husband and two children. Many evenings and most every weekend have been dedicated to my studies. They have endured a great deal and for this I will be eternally grateful.

Table of Contents

TITLE PAGE 1

ACKNOWLEDGEMENTS 2

TABLE OF CONTENTS 3

ABSTRACT 5

INTRODUCTION 6

STATEMENT OF PROJECT 6

RATIONALE 7

BACKGROUND 8

PURPOSE STATEMENT 9

REVIEW OF THE LITERATURE 10

THE GARDEN PROJECT: TURNING AN IDEA INTO REALITY 16

CONNECTION TO THE CLASSROOM 17

A GARDEN JOURNAL 19

THEME GARDENS 19

DISCUSSION 20

CONCLUSIONS/IMPLICATIONS 21

REFERENCES 23

APPENDIX A: RELATED BOOKS 26

APPENDIX B: RESOURCES 34

APPENDIX C: ADDITIONAL WEB RESOURCES 38

Introduction

The Mill Valley Children's Garden established at Edna Maguire Elementary School in California has become the model for school garden development. The garden is an outdoor classroom for nearly 400 students and is used by six other schools in the district. It has introduced students to the pleasure of gardening as well as promoting an understanding of ecology and respect for all living things. It is a living laboratory in which to study and experiment (Mill Valley Children's Garden).

In schools, gardens are being integrated into the educational curriculum to teach children not only about plants, nature, and the outdoors, but other subjects as well. Gardens can teach children about history, economics, poetry, math, and science studies. Teachers can base the school garden on a theme, concept, or topic for teaching children ideas in a particular area. Theme gardens give a guideline for what to plant because it relates directly to an overall theme. These gardens incorporate an interdisciplinary approach to the garden. The curriculum or class interests can give direction to the theme.

The focus of this paper is how to reconnect children to the natural world through a classroom garden. It has the potential to empower them to learn the values and gain the knowledge and skills that are crucial to building and nurturing ecologically sustainable communities.

Statement of Project

This project investigates how a school garden can increase interdisciplinary learning about the environment. Children learn best by doing. Doing requires

motivation, curiosity, some freedom to experiment and explore, and an opportunity to put basic skills to practical application. This type of active learning allows the child to discover answers through exploration and experimentation. Traditional classroom teaching, where the teacher stands and talks while the children sit and listen, does not always give practical meaning to education. Giving children opportunities to learn by doing does require that children have hands-on experience. Learning activities in the school garden can be structured to develop cooperative effort and group problem solving. Gardens have been observed to increase the child's respect for nature and to aid in physical, mental and moral development. Studies have been conducted to look at some of the benefits of school gardens including their effect on self-esteem and environmental attitudes. Additionally, there remain many more benefits to explore; including the effect gardening has on nutritional attitudes and behaviors.

Rationale

In the early decades of the 20th century, Dewey (1939) established a philosophical foundation of experiential education upon which others have built. He proposed progressive education that emphasized learning through experience. He also suggested that it is the educator's job to arrange structured experiences that facilitate student growth and development.

Dewey's philosophical pragmatism, concern with interaction, reflection and experience, and interest in community and democracy, were brought together to form a highly suggestive educative form.

> Dewey's significance for informal educators lies in a number of areas. First, his belief that education must engage with and enlarge experience

> has continued to be a significant strand in informal education practice. Second, Dewey's exploration of thinking and reflection - and the associated role of educators - has continued to be an inspiration. Third, his concern with interaction and environments for learning provides a continuing framework for practice. Last, his passion for democracy, for educating so that all may share in a common life, provides a strong rationale for practice in the associational settings in which informal educators work. It is with these key thought that have influenced educators to rethink their teaching methods (Smith, 2002, p.1).

Dewey knew that learning should be experimental. The student should construct their own knowledge. Learning should be natural and meaningful. Students should be scientists, continually experimenting with different materials in order to learn more (Rogers, 1994).

> As societies become more complex in structure and resources, the need of formal or intentional teaching and learning increases. As formal teaching and training grow in extent, there is the danger of creating an undesirable split between the experience gained in more direct associations and what is acquired in school (Dewey, 1916, chap.1, ¶ 23).

A school with a garden provides that unique opportunity to activate a child's awareness of the environment in a lasting way. Observation alone is not enough to convince them. School gardens are meant to encourage and empower children to change their community and world for the better (Brynjegard, 2001).

Background

The history of the American school garden movement can be traced back to the mid – 1800's. By the turn of the century, school gardens were no longer a fad; rather they were considered an important component of a well-rounded education. School garden programs peaked during World War II with the creation of the Victory Garden

program. Cleveland, Ohio, had one of the best public school gardening programs due in part to the Victory Garden movement. Every Cleveland school had a garden. Many teachers and students returned throughout the summer to tend to the gardens. All students helped with the harvest in the fall. Up until the late 1960's and early 1970's school gardens remained common at many schools. However, with the start of forced bussing programs to desegregate schools, as well as other shifting demographics and educational priorities, school gardening programs began to erode. From the 1970's to the early 1980's, school gardening programs fell dormant. However, more recently, due to renewed environmental awareness, new educational trends, and insights into how a school environment affects youth behavior and development, school gardening and beautification projects are enjoying a revival (Heffernan, 1997).

A recent national study found that student science scores were lower in California than in nearly any other state or U.S. territory. (National Assessment of Education Progress, 2001). A major finding was that Fourth-graders, whose teachers reported having students work together on science activities daily or weekly, had higher average scores than those who did so less frequently. Eighth-graders, whose teachers reported having students work together on science activities daily, had higher average scores than students whose teachers had them do so weekly, monthly, or never/hardly ever.

Purpose Statement

The purpose of this paper is to investigate the benefits of having a school garden and integrating curriculum to enhance learning. There is a diminished emphasis

on science in today's classroom. A school garden offers students a chance to explore plant life cycles, and provides a hands-on context for teaching a wide variety of basic subject area skills in science, mathematics, social studies, language arts, health, and fine arts. A school garden creates awareness in children and is also beneficial for a teacher's ability to integrate lessons in order to meet grade level standards.

Review of the Literature:

Curriculum integration has become the cornerstone of educational reform. The standards remind us that unifying concepts and processes give students strong ideas that help them better understand the natural world.

In 1988, President George Bush launched the America 2000 campaign, which encouraged the nation's governors to introduce new education standards for American public schools. In 1994, President Bill Clinton's Goals 2000 initiative, specifically Public Law 103-227, provided financial support for state adoption and implementation of these standards. Today, most states use standards-based education. (Powell & Wells, 2002)

Standards define what students should know or be able to accomplish at certain phases of their schooling; they are the benchmarks against which individual performance and progress can be judged (Standards and Assessment Development and Implementation Council, 1994). Since standards are merely benchmarks, they are not designed to direct which curricula or methods should be used to meet them. Teachers, therefore, increasingly need effective methods and materials to achieve such standards. Toward this end, educators often consider experiential education curricula (Powell & Wells, 2002).

The teacher's role in this learning cycle is to assist the learner in integrating experiences. Linking experiences to the curriculum can help the learner grasp new ideas and modify old concepts throughout the process. In so doing, the teacher serves as a manager or facilitator of the learner's development (Powell & Wells, 2002).

There are important reasons to use interdisciplinary instruction. First, learning science and language arts is reciprocal. Proponents claim that learning science can be described as a process similar to learning language, from questioning and setting a purpose to analyzing and drawing conclusions, and communicating results. Thus, process of science and literacy learning are similar and may help the development of each discipline if the teacher is explicit in helping students note the similarities. Second, elementary students need to read, write and communicate about something; science can provide that purpose. Using an interdisciplinary strategy can help us meet those state and national science objectives in a way that support language arts (Smith, 2002). Connecting language arts to science makes sense because many elementary teachers' strengths are in language arts (Akerson & Flanerty, 2000). Interdisciplinary teaching can help teachers meet objectives for both language arts and science and still prepare our elementary students for the tests they must take. (Smith, 2002)

Heffernan (1997) promotes the benefits of establishing gardens at schools. School gardens are a practical and effective way to connect children with nature, teach hands-on science and environmental education, and beautify barren school grounds. School ground improvement, such as the installation of a school garden can improve the academic and social behaviors of students.

School gardens are being revived to help children learn better nutrition habits. California has begun a statewide program entitled, "A Garden in Every School." The gardens will teach children the importance of agriculture, food preparation, nutrition, and environmental responsibility. (Heffernan, 1997) Additionally, growing produce to sell or use with school lunch program is becoming popular.

While many schools are developing and beautifying their school grounds there are important issues and opportunities to consider while sustaining the school garden revival. Improvement of test scores, promotion of school garden benefits, gaining community and government support, building political coalitions are a few of the issues that Heffernan addresses.

Sullivan (1999) states that gardening projects can enhance school lunch programs and improve the nutrition of project participants. She admits that limited information exists on the most effective models and methods for establishing community gardens in rural areas. A Wisconsin gardening project, Nutrition through Gardening, consists of a nutritionist who teaches the classrooms involved with a school garden about the USDA Food Guide Pyramid and nutrition. School gardens are established in both elementary and middle schools, and the program is built into the school curriculum. During the summer months, children attending summer school programs tend to the garden. Sullivan lists the pros: in-class lessons are reinforced and enhanced through experiential learning in the garden; children receive nutrition education; students provided a constant volunteer base. She also states that one of the cons to school

gardens is that it requires teacher and administration willingness to incorporate lessons into curriculum.

Rivkin and Coffee (1999) report that with the "greening of the schoolyard" gathering momentum, it is important to build an understanding between educators and facilities managers. Principals are advised to avoid surprises, consider costs, plan for long-term maintenance, consider safety and liability, address concerns about physical security, and keep the neighbors happy.

There are obstacles to managing the schoolyard gardening project, which include miscalculations and poor planning. One incident showed a teacher who had planted trees over fiber optic phone lines that could cost thousands of dollars per day if service was interrupted. Having water infiltration systems next to school buildings was an invitation to structural and air quality problems, in addition to the possibility of introducing mold to the buildings. The authors offer solutions to some of these obstacles especially to know and communicate with facility planners and maintenance professionals on schoolyard projects. Principals can review a copy of the school's physical plans, looking for storm drainage, truck access and other systems.

On a more positive note, Rivkin and Coffee (1999) report on a storybook garden at Bay Meadows Elementary School where one is greeted by a five-foot, koala-shaped topiary. The visitor sees bubbling fountains, a pioneer cabin, colorful birds and butterflies, and an attractive array of flowers, shrubs, and trees. This storybook garden, on a small third-acre site, incorporates four theme areas, linked by a winding brick

walkway: The Arboretum, the Amazing Maze, Native and Colonial America, and the Butterfly and Hummingbird Sanctuary.

Today, it is a garden that appeals to children and enriches their education. The garden also boasts 21 topiaries, five fountains, a waterfall, a ten-foot sundial, four Asian stones denoting the seasons, a pagoda, and a grassy tiered amphitheater, where children can study, read, sing, draw, or view a presentation (Rivkin & Coffee, 1999).

Classes at Bay Meadows Elementary School are scheduled for thirty-five minutes of garden time each week. These classes initiate a school-wide "garden question of the week" to help focus children on the mathematical, scientific, historical, horticultural, and literary aspects of the garden. A garden newsletter is published monthly with innovative curriculum ideas, such as releasing praying mantises to benefit the garden. The art teacher holds sketching, painting, and photography classes in the garden, and the media specialist places related books next to the garden's statues and topiaries. Students' enthusiasm is reflected in their writing. A third grader wrote, "What an unbelievable garden! When I get a new house, I hope I get a garden just like ours at Bay Meadows" (Rivkin & Coffee, 1999).

Otto (1999) offers another alternative to the schoolyard and the alternative school. The idea of creating a secret garden came from her observing a need the children seemed to have for a small, enclosed outdoor space. She had been struggling with the idea of having a vegetable garden. Since school is not in session during the summer months, creating a vegetable garden did not match the school schedule. Also, the possibilities of where, what, and how to get a garden started from a grassy lawn

area was overwhelming. Square Foot Gardening (Bartholomew, 1981) offered a way to think and plan a garden in an organized way and decide on a logical and manageable size for the garden. It describes, step by step, how to start a new garden space.

Three "fancy" concrete blocks were installed as seats in the three inside corners. This limits the secret garden to a maximum of three children at a time, which encourages quiet, calm reflection, conversation, or exploration of nature. A few garden sculptures are hidden among the growing perennials. The children take delight in discovering them hiding among the leaves. The children also enjoy making the long trek from the water spigot to the garden carrying one of three small cans. The opportunities for learning about nature and experiencing the changing seasons are many in the secret garden. In the spring, the students patiently wait and watch for the shrubs to begin their new growth. The taller they get, the more enclosed and cozy the secret garden becomes. As the children grow and change, so does the garden (Otto, 1999).

In a world where science has become too confined to books and overly reliant on technology, and science fairs have been taken over by parents, Russell (1997) suggests that young people need an actual hands-on experience with nature. Living in a constantly changing world, scientific discoveries have changed our life styles and education must change as well. Now, as never before, science skills are essential.

Proponents of standards-based education believe hands-on science enhances learning, which boosts students' overall performance. The results of the study conducted by Powell and Wells (2002) suggest that students improved their percentage test scores by as much as 24% after participating in experiential science lessons.

Experientially based programs that directly engage the student in the learning process seem to promote learning. For educators and administrators who need to infuse curriculum with education techniques that successfully meet standards, these education activities might be appropriate choices. In addition, it is suggested that more than one science curriculum might be useful in meeting state standards. This is an important implication for educators and administrators who recognize that some curricular programs may not correlate fully with some standards and may need to be buttressed by other curricula to meet those standards. Furthermore, multiple methods help maximize teacher flexibility and help teachers match activities with students' differential learning styles.

Students in upper elementary and middle school often experience difficulty and anxiety when asked to read informational text. Teachers need effective researched-based instructional strategies to insure their students can access science texts and learn from them.

The Garden Project: Turning an Idea into Reality

School gardens thrive everywhere, in both cold and warm climates, and in urban, suburban, and rural communities. School gardens exist in school with no bare ground, and in schools with acres of land. Organizers should adapt strategies that work and tailor the garden to fit the school needs. Consider keeping a garden journal as a way to help organize thoughts and keep track of progress when planning the outdoor classroom. Include a checklist of these basic components. Remember to leave space

for notes and ideas when working through the process. A journal is also a great place to keep track of garden contacts, including suppliers, volunteers, and outside experts.

Connection to the Classroom

An outdoor classroom will provide endless opportunities for integrating curriculum areas. It is recommended that each student maintain a garden journal, appropriate to his or her abilities, to record observations, collect data, make analyses of his or her experiments, and keep records and drawings of the garden. If the class is scheduled to use the school garden once a week, plan an outdoor lesson for that time and then plan related follow-up lessons for the classroom.

As the teacher plan ways to integrate subject areas, there are many opportunities for students to apply the knowledge and skills they have learned in one subject area to the work they are doing with the garden. For example, to gather background information to help develop a theme garden, students will read reference materials to research information, and then write their plans. In analyzing garden data, students will be applying math skills. In studying the effects of erosion on soil, there are opportunities to integrate social studies and science. Sitting quietly in the garden and drawing the plants or animals that they see, students will be applying their drawing skills to natural history observations.

The important task of documenting the history of the outdoor classroom can become a class project that will provide opportunities to integrate language arts, photography, drawing, history and science. Consider having the class document the changes that take place in the garden over the school year.

The steps involved in initiating a school garden program will vary from school to school. Here are some suggested guidelines:

1. STAFF PLANNING: A faculty meeting should be called of all the teachers who wish to participate in the garden. A list should be drawn up of all the steps necessary in beginning the garden. Points to consider included acquiring land, seed and tools, providing water and security, allotting garden space to each class involved, informing parents and community leaders, working the garden into a timetable, and integrating curriculum.
2. PARENT MEETINGS: It is important for parents to recognize the educational aspects of the garden. It should be explained that the school garden is a teaching tool. Enlisting volunteers is critical to the success of the program.
3. STUDENTS: The students should be involved in determining the location of the garden plots, the crops to be grown, the process of preparing the space and acquiring tools and seed. The greater the student involvement in each step of the planning, the greater their sense of pride and accomplishment and the more they will learn.
4. PLOTS: Each class should have its own plot even if it means that less can be grown in the garden as a whole. Each class needs its own area in order to build a sense of pride and accomplishment and to have a space to conduct experiments that will not be disturbed by other classes.

A Garden Journal

Each class should keep a journal of all their gardening activities to include:

- Day to day account of garden work and observations
- Experiments
- Expenses, profit and losses
- Graphs and charts
- Interviews
- Drawings and diagrams
- Diagram of the garden
- Information about crops, pests, fertilizers
- Related poems and stories

One way of recording the student's observations and gardening experiences is to write a description as a class. The teacher records the students' responses on the blackboard. The purpose of the journal is to pull together all of the information the class studies or gathers about their gardening venture.

Theme Gardens

History Gardens: Use the garden to make history come alive for students. Investigate gardens in Colonial America, or explore Native American gardens.

Butterfly Gardens: Use the school garden to investigate native plants and animals. Research what butterflies live in the area and the plants they depend on. Then plant a butterfly habitat in the schoolyard.

Dye Gardens: Many dye plants were brought to the New World by European settlers. Use a dye garden for classroom projects.

A Literature Garden: Planning a literature themed garden is a great way to help students 'grow' an interest in reading. Each plant represents a book or poem.

Discussion

We should be turning out a population of young scientists because the scientific skills of drawing conclusions based on observation, questioning, experimenting, measuring, recording, predicting, comparing, and pooling knowledge are essential to everyday life. Unfortunately, much of what is called science today teaches none of these skills. Instead, workbook reading, memorizing facts and written tests one day a week often fulfill the science curriculum.

While children need to be technologically adept, they are lacking the transforming exposure to nature which is so important in their early years in order to develop an "environmental sympathy," respect, and curiosity about the natural world. At the very least they should experience the power, fragility, interconnectedness, and awe of nature to become environmental stewards of the future. School gardens afford a practical yet dynamic opportunity to link children with nature.

Educators can no longer explain science concepts to students only from a textbook. They need to teach "hands-on, minds-on" science techniques. School gardens are useful for this technique and what better context than a garden where these children observe natural processes and cycles?

Creating interrelated curriculum programs has become an educational priority for many school districts. School gardens can function as a teaching nexus to link the natural sciences, history, social studies, art, language, and other subjects. The added aesthetic benefits of gardens beautifying school grounds make school gardens an excellent investment.

Butterfly gardens, native plants, and heirloom gardens have become an extremely popular phenomenon it the U.S. Many horticultural organizations and publications are promoting this 'ecologically-correct' gardening trend. Schools are establishing gardens to attract and sustain butterflies, promote wildlife habitats and rescue and perpetuate unique traditional seed varieties that result in heirloom gardens. Many of these projects include interdisciplinary education strands which link the history of heirlooms or native plants to the biological principles learned through the restoration projects.

Conclusions/Implications

A school garden offers students a chance to explore plant life cycles, and provides a hands-on context for teaching a wide variety of basic subject area skills in science, mathematics, social studies, language arts, health, and fine arts. School gardens can teach students about cooperation, nature, science, creativity, and

community service. Gardens can also help teachers address students' diverse needs and interests. Integrating subjects through the garden can meet other curricular objectives. A classroom garden can offer project-based activities that are interdisciplinary. Creating a schoolyard habitat where various small theme gardens can be developed is stimulating and students can learn about local ecology, biodiversity and gardening. Beyond developing an increased appreciation for the natural world, these outdoor classrooms create an environment where students can plan and implement specific projects related to nutrition, environmental awareness, and community beautification.

What is the purpose of education? If we agree that it is to assist children in developing the skills they need to live productive lives, we must define what those skills actually are. Giving children opportunities to learn by doing requires that children have hands-on experience. What is the value of teaching children to use equipment that they may never encounter in their home or community? A more valuable and practical experience would be the opportunity to explore and discover the actual environment. A school garden can be a laboratory for teaching school curriculum.

References

Akerson, V. L., & Flanigan, J. (2000). Preparing pre-service teachers to use an interdisciplinary approach to science and language arts instruction. *Journal of Science Teacher Education, 11*, 345-362. Retrieved January 14, 2003, from ERIC database.

Brynjegard, S. (2001). *School gardens: Raising environmental awareness in children*. San Rafael, CA: Dominican University of California. (ERIC Document Reproduction Service No. ED452085).

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, Macmillian. [Electronic Version] Retrieved January 14, 2003, from http://www.ilt.columbia.edu/publications/dewey.html

Dewey, J. (1939). *Experience and education*. New York: Macmillan.

Heffernan, M. (1997). *Horticulture rediscovered: The flowering of American schoolyards*. Ohio. (ERIC Document Reproduction Service No. ED446965).

Edna Maguire Elementary School. *Mill Valley Children's Garden*. (n.d.) Retrieved January 14, 2003, from http://www.mvschools.org/em/Default.htm

National Assessment of Educational Progress (NAEP). (2001). *The nation's report card.* Retrieved January 14, 2003, from http://www.nces.ed.gov/nationsreportcard/science/

Otto, J. (1999). A secret garden. *Montessori Life, 11*, 23. Retrieved January 14, 2003, from ERIC database.

Powell, K., & Wells, M. (2002). The effectiveness of three experiential teaching approaches on student science learning in fifth-grade public school classrooms. *Journal of Environmental Education, 33*, 33-38. Retrieved January 14, 2003, from ERIC database.

Rivkin, M.S., & Coffee, S.R. (1999). Make the most of your schoolyard. *Principal, 79*. 31-35. Retrieved January 14, 2003, from ERIC database.

Rogers, L. H. (1994). *California freshwater shrimp project: An eco-action project with real life learning.* San Rafael, CA: Dominican College. (ERIC Document Reproduction Service No. ED374963).

Smith, B. (2002). *Teaching teachers: Bringing first-rate science to the elementary classroom.* Virginia. (ERIC Document Reproduction Service No. ED463161).

Smith, M. K. (2002). *John Dewey*. Retrieved January 14, 2003, from http://www.infed.org/thinkers/et-dewey.htm

Standards and Assessment Development and Implementation Council. (1994). *Standards-based education and H.G. 93-1313*. Denver, CO: Colorado Department of Education.

APPENDIX A: Related Books

Listing of agricultural-related books provided by California Foundation for Agriculture in the Classroom.

Adoff, Arnold. ***Eats***. Mulberry Books, 1992.
Poems pay tribute to the universal pleasures of consuming food.

Aliki. ***Corn is Maize***. Harper & Row, 1976.
The story of how ancient Indian farmers discover a wild grass plant, use it in their lives and how they eventually share it with the new settlers of America.

Appelt, Kathi. ***Watermelon Day***. Henry Holt and Company, 1996.
A young girl watches a watermelon's growth all summer waiting for it to ripen.

Azarian, Mary. ***A Farmer's Alphabet***. David R. Godine, 1987.
A noteworthy picture book depicting an older, agrarian way of life.

Baldwin, Robert F. ***This is the Sea that Feeds Us***. Dawn Publications, 1998.
This book links the fish dinner enjoyed by a thankful family with the entire marine food web. Beginning with tiny plankton, each verse introduces a new link to the marine food chain, then connects it to everything else.

Bial, Raymond. ***Portrait of a Farm Family***. Houghton Mifflin Company, 1995.
Through words and pictures, the daily life of a farm family describes the chores, challenges and joys of living on a farm.

Brown, Craig. ***Tractor***. Greenwillow, 1995.
In simple language, this book covers the use of a tractor from the working of the soil all the way to the delivery of produce to market.

Brown, Laura Krasny. ***The Vegetable Show***. Little, Brown and Company, 1995.
Watch vegetables do a little vaudeville in their attempt to dance and sing their way onto the plates and into the hearts of kids.

Bunting, Eve. ***Market Day***. HarperCollins Publishing, 1996.
Young children in Ireland observe farm animals and crops when they visit a country fair on market day.

Bunting, Eve. ***Sunflower House***. Harcourt Brace Company, 1996.
A young boy creates a summer playhouse by planting sunflowers and saves the seeds to make another house the next year.

Charles, N.N. ***What Am I? - Looking Through Shapes at Apples and Grapes***.
Blue Sky Press, 1994.
Illustrations with cut-out shapes and rhyming questions introduce fruits, colors and shapes.

Coats, Laura Jane. ***The Almond Orchard***. Macmillan Publishing, 1991.
The workings of an almond orchard over almost a 100-year time span shows changes in the seasons and in the technology of almond farming.

Cole, Henry. ***Jack's Garden***. William Morrow & Company, 1995.
Shows what happens in Jack's garden after he plants seeds.

BEST COPY AVAILABLE

Cole, Joanna. ***The Magic School Bus at The Waterworks***. Scholastic Inc., 1986. A field trip in The Magic School Bus allows Ms. Frizzle's class to get a first-hand look at water processing.

Collins, David R. ***John Deere: Pioneer Plowman***. Lerner Publishing Group, 1990. Lively, accurate text portrays the life of John Deere, a hard-working, idealistic man whose steel plow opened up some of the world's richest farmland.

Cooney, Barbara. ***Miss Rumphius***. The Viking Press, 1982. Great-aunt Rumphius was once a little girl who loved the sea, longed to visit faraway places, and wished to do something to make the world more beautiful. She planted lupines

Cowley, Joy. ***The Rusty, Trusty Tractor***. Boyds Mills, 1999. Tractor salesman Mr. Hill tries to convince Micah's Grandfather that his old tractor has seen better days.

Dannenmaier, Molly. ***A Child's Garden: Enchanting Outdoor Spaces for Children and Parents***. Simon and Schuster editions, 1998. Photographs of children and gardens. Informational text provides plans and ideas for creating outdoor gardens of all kinds for children to enjoy.

Darian, Shea. ***Grandpa's Garden***. Dawn Publications, 1996. On Saturdays, Grandpa and grandchild work side by side in the garden. Among the radishes and rhubarb they share their deepest feelings and wishes. First hand they learn of life and death, growth and change.

Demi. ***One Grain of Rice: A Mathematical Folktale***. Scholastic, Inc., 1997. The importance of this staple food is explored as Rani, a clever young girl, receives double the amount of rice as the day before.

Dunrea, Oliver. ***The Painter Who Loved Chickens***. Farrar, Straus, Girous, 1995. A city-dwelling artist longs to live on a farm because he so loves chickens. Find out how his dreams come true.

Ehlert, Lois. ***Eating the Alphabet: Fruits and Vegetables from A to Z***. Harcourt Brace Jovanovich, 1989. An alphabetical tour of the world of fruit and vegetables from apricot and artichoke to yam and zucchini.

Ehlert, Lois. ***Planting a Rainbow***. Harcourt Brace Jovanovich, 1988. A mother and child plant a rainbow of flowers in the family garden.

Ericsson, Jennifer A. ***No Milk!*** Mulberry Books, 1998. When a city boy can't coax milk out of a dairy cow, he resorts to desperate measures like kissing her nose, doing magic tricks and even bribery. They finally come to a dramatic compromise.

Fleischman, Paul. ***Seedfolks***. HarperCollins Publishers, 1997. One by one, a number of people or varying ages and backgrounds transform a trash-filled inner-city lot into a productive and beautiful garden. In doing so, the gardeners are themselves transformed.

Fowler, Allan. ***It Could Still Be a Worm***. Children's Press, Inc., 1996 Informational text about worms includes colorful photographs and large print size for the young readers.

French, Vivian. ***Oliver's Vegetables***. Orchard Books, 1995.
In grandfather's garden, a young boy learns about eating vegetables.
Gardella, Tricia. ***Blackberry Booties***. Orchard Books, 2000.
Mikki Jo wants to give her new baby cousin the perfect gift but doesn't know how to make anything. What she does know is how to pick blackberries. But babies don't eat blackberries so Mikki figures out how to make the perfect gift.
Gardella, Tricia. ***Casey's New Hat***. Houghton Mifflin Company, 1997.
Casey accompanies Dad on a day of buying supplies and doing ranch chores in search for a perfect hat.
Gardella, Tricia. ***Just Like My Dad***. Harper Collins, 1993.
The adventures of a young child who spends a day on a cattle ranch as a cowhand, just like Dad.
Geisert, Bonnie and Arthur. ***Prairie Town***. Houghton Mifflin Company, 1998.
Enter a prairie town and explore the social and economic life of this community from the aspects of farmers and townspeople.
Gershator, David and Phillis. ***Bread is for Eating***. Henry Holt, 1995.
Mamita explains how bread is produced from seed to flour in a poem/song in English and Spanish.
Gibbons, Gail. ***Apples***. Scholastic Inc., 2000.
Learn about apple production in this colorful, simple-to-read picture book.
Gibbons, Gail. ***Country Fair***. Little, Brown & Company, 1994.
A visit to a country fair in autumn features livestock, farm products and quilts.
Gibbons, Gail. ***Farming***. Holiday House, 1988.
An introduction to farming and the work done on a farm throughout the seasons.
Gibbons, Gail. ***The Milk Makers***. Macmillan Publishing Company, 1987.
Text and pictures explain how cows produce milk and how it is processed before being delivered to stores.
Gibbons, Gail. ***Pigs***. Holiday Press, 1999.
This book outlines the characteristics, habits, and uses of pigs.
Gibbons, Gail. ***The Pumpkin Book***. Scholastic Inc., 1999.
The life cycle of the pumpkin is clearly depicted in this picture book. How pumpkins are used at Thanksgiving and Halloween is also discussed.
Gibbons, Gail. ***The Seasons of Arnold's Apple Tree***. Harcourt Brace Jovanovich, 1984. Drawings and text show a young boy's apple tree as it grows and changes throughout the year.
Glaser, Linda. ***Compost!*** Millbrook Press, 1996.
Explains what composting is, what it does, and how to go about using it.
Glaser, Linda. ***Wonderful Worms***. Milbrook Press, 1992.
Describes the physical characteristics, behavior and life cycle of the common earthworm.
Guthrie, Woody. ***This Land Is Your Land***. Little, Brown and Company, 1998.
This classic folk song is brought to life in this illustrated edition and invites readers to journey across the country to view America's diverse land and people.

Harbison, Elizabeth M. ***Leaves of Fun***. Chicago Review Press, 1997.
More than 50 recipes and activities take children on a multicultural journey throughout the ages and across the world to discover the history and uses of bread.

Harrison, David L. ***Farmer's Garden, Rhymes for Two Voices***. Boyds Mills Press, 2000.
Farmer's dog is a curious dog. He wanders through Farmer's Garden greeting each creature, fruit, and vegetable he meets with a question.

Hart, Avery and Mantell Hart. ***Kids Garden***. Williamson Publishing co., 1995.
Using black and white illustrations, this book provides over 100 activities children and their families or classmates can do to learn more about plants. Ideas on how to grow your own broom, making homemade potato chips, and planting a butterfly cafe or a salad garden are just a few of the stimulation "how-to" ideas presented in a student-friendly garden activity book.

Hauck, Phillip E. ***Plum Full of Prunes***. Dab Publishing Company, 1999.
Watch a plum tree progress from a seed, to a tree, and finally into a prune plum.

Hauck, Phillip E. ***A Timeless Journey Told by Mr. Walnut***. Walnut Marketing Board
In this mini-travelogue, author Phillip E. Hauck traces the history of the walnut from pre-historic man all the way to the first walnut tree planting in California by the mission Fathers.

Hausherr, Rosemarie. ***What food is This***. Scholastic, 1994.
Fish, sausage, carrots and many more foods are detailed in this tale of food origins. Fun trivia for the entire family.

Iverson, Diane. ***My Favorite Tree: Terrific Trees of North America***. Dawn Publications, 1999.
Examines traits and uses of 26 North American trees and how they play a significant role in our history, traditions, ecology, economy, and in the natural glory of our land.

Jackson, Woody. ***Counting Cows***. Harcourt Brace & Co., 1995.
A whimsical counting book features cows and cow terminology.

Jaspersohn, William. ***Cranberries***. Houghton Mifflin Company, 1991.
Text and color photos show the raising and harvesting of a cranberry bog.

Kalman, Bobbie. ***Hooray for Orchards***. Crabtree Publishing Company, 1998.
Through photographs and technical text, this book describes the workings of an orchard, the care they need and the products they produce.

Kalman, Bobbie. ***Hooray for Sheep Farming***. Crabtree Publishing Co., 1998.
Introduces the raising of sheep for wool; covers aspects like shearing, lambs, sheep dogs, wool processing, farm maintenance, and the proper care of sheep.

Kalman, Bobbie and Janine Schaub. ***Squirmy Wormy Composters***. Crabtree Publishing Company, 1992.
Through colorful photographs, this book provides the young reader with the whys and hows of vermicomposting.

Kellogg, Steven. ***Johnny Appleseed - A Tall Tale Retold***. Morrow Junior Books, 1988. Prose and pictures tell the story of an American hero.

King, Elizabeth. ***Backyard Sunflower***. Dutton Children's Books, 1993. Text and color photos follow the life cycle of sunflowers from seed to products.

Kite, L. Patricia. ***Gardening Wizardry for Kids***. Barrons Educational Series, 1995. Provides a collection of more than 300 extraordinary experiments and projects for K–3rd grade. Clear text and easy-to-follow directions make it great for home or classroom.

Kneidel, Sally. ***Slugs, Bugs and Salamanders: Discovering Bugs in Your Garden***. Fulcrum Publishing, 2000. Emphasizes the role of insects and other animals in the garden.

Kroll, Steven. ***The Biggest Pumpkin Ever***. Holiday House, 1984. A tale of two mice who raise and harvest a very large pumpkin.

Krudwig, Vickie Leigh. ***Cucumber Soup***. Fulcrum Publishing, 1998. This picture book of whimsical insects introduces critters one would find in a garden to students as they count from 10 to one.

Kuklin, Susan. ***How My Family Lives in America***. Bradbury Press, 1992. Tells the story of three children, each with a different immigrant parent. Discusses the foods they eat, the names of the different dishes and their eating customs. Includes an African, Puerto Rican and Taiwanese recipe.

Lavies, Bianca. ***Compost Critters***. Dutton's Children's Press, 1993. Photographs and informational text about the critters one may see in a compost bin or garden.

Leedy, Loreen. ***The Edible Pyramid***. Holiday House, 1994. Colorful and whimsical graphics complement the story of eating at the Edible Pyramid Restaurant where the specialty is a healthy diet.

Lesser, Carolyn. ***What a Wonderful Day to be a Cow***. Alfred A. Knopf, 1995. Every month of the year, the animals on the farm enjoy their way of life. Describes seasons of the year on a farm.

Lindbergh, Reeve. ***Johnny Appleseed***. Little, Brown & Company, 1990. Rhymed text and illustrations relate the life of John Chapman, whose distribution of apple seeds and trees across the Midwest made him a legend and left a legacy still enjoyed today.

Lindbergh, Reeve. ***The Midnight Farm***. Dial Books for Young Readers, 1987. Secrets of the dark are revealed in this poem describing a farm at midnight.

McDonald, Margaret Read. ***Slop! A Welsh Folktale***. Fulcrum Publishing, 1997. This retold folktale shows what a clever man and woman do with their leftover vegetable peelings and dishwater. Introduces the concept of composting.

MacLachlan, Patricia. ***All the Places to Love***. HarperCollins, 1994. A young boy describes the favorite places he shares with his family on his grandfather's farm and nearby countryside.

McMillan, Bruce. ***Eating Fractions***. Scholastic Press, 1991.
Food is cut into halves, thirds and fourths to illustrate how parts make a whole. Enjoy a photographic feast of fractions as two playful youngsters eat their way through.

McPhail, David. ***Farm Morning***. Harcourt Brace Jovanovich, 1985.
A father and his young daughter share a special morning as they feed all the animals on the farm.

Marzzolo, Jean. ***Sun Song***. HarperCollins, 1995.
Animals and plants respond to the changing light over the course of a single day.

Mathers, Petra. ***Kisses from Rosa***. Alfred A. Knopf, 1995.
Young Rosa is sent to Aunt Mookie's farm while Mami recovers from TB. At first, Rosa can only cry; in time, she's caught up in all the farm's activities.

Minor, Wendell. ***Grassroots - Poems by Carl Sandburg***. Browndeer Press, Harcourt Brace & Co., 1998.
Fourteen poems with Midwestern themes or settings provide timeless observations about the heart of America. Illustrations add to the profound evocation of the sights and sounds of the Midwest.

Older, Jules. ***Cow***. Charlesbridge, 1997.
A lighthearted, nonfiction book on cows, breeds and milk production.

Palacios, Argentina. ***Peanut Butter, Apple Butter, Cinnamon Toast: Food Riddles for You to Guess***. Raintree Steck-Vaughn, 1992.
A book of food riddles for children.

Pallotta, Jerry and Bob Thomson. ***The Victory Garden Alphabet***. Charlesbridge, 1992. Colored illustrations and descriptions from asparagus to zucchetta.

Paulson, Gary. ***Harris and Mee: A Summer Remembered***. Harcourt Brace, 1993. An 11-year-old city boy is used to being pawned off on relatives. What he is not used to is the farm setting, the hard work, these cousins, and what the summer brings him this time around.

Paulsen, Gary. ***The Tortilla Factory***. Harcourt Brace & Co., 1995.
Simple text and paintings tell the story of tortillas from corn seed to plant and then to factory and store.

Perkins, Lynne Rae. ***Home Lovely***. Greenwillow Books, 1995.
A lonely young girl living in an isolated trailer makes new friends and gains knowledge by growing flowers and melons. Along the way, she beautifies her home.

Peterson, Cris. ***Century Farm: One Hundred Years on a Family Farm***. Boyds Mills Press, 1999.
Family anecdotes and family photos share the story of a 100 year farm as it grew from the 1890's into a thriving dairy.

Peterson, Cris. ***Extra Cheese, Please!*** Boyds Mills Press, 1994.
Text and color photos show milk's journey from cow to cheese to pizza.

Peterson, Cris. ***Harvest Year***. Boyds Mills Press, 1996.
Full color photos and clear, concise text take readers month-by-month through a sampling of the wide diversity and volume of crops grown throughout the United States.

Provensen, Alice and Martin Provensen. ***Town and Country***. Crown Publishers, 1985. Describes life in a big city and on a farm near a village.

Ray, Mary Lyn. ***Pumpkins***. Harcourt Brace & Co. 1992.
A man harvests and sells a bountiful crop of pumpkins so that he will be able to preserve a field from developers.

Robbins, Ken. ***Make Mine a Peanut Butter Sandwich and a Glass of Milk***. Scholastic, 1992.
Text and photos show how each part of a peanut butter sandwich and milk for lunch is made, from field to store to table.

Scott, Ann Herbert. ***A Brand Is Forever***. Clarion Books, 1993.
Filled with authentic details of life on a Western cattle ranch, Annie learns about branding as her own calf Doodle is branded.

Shannon, George. ***Climbing Kansas Mountains***. Bradbury Press, 1993.
A young boy and father share the beauty of a Kansas farm and landscape.

Simon, Seymour. ***Autumn Across America***. Hyperion, 1993.
Text and color photos describe the signs of autumn around the United States including the harvesting of crops, leaves changing colors, bird and insect migration and changes in climate.

Small, David. ***George Washington's Cows***. Farrar Straus Giroux, 1994.
Humorous rhymes about George Washington's farm, where the cows wear dresses, the pigs wear wigs and the sheep are scholars.

Splear, Elsie Lee. ***Growing Seasons***. G.P. Putnam's Sons, 2000.
This true story of Elsie Lee Spiear's childhood spent on Illinois tenant farms in the early part of the 20th century provides an historical view of farm life during that time period.

Steele, Mary Q. ***Anna's Garden Songs***. Celebration Press, 1996.
The whimsical songs can be sung while working in the garden or classroom to teach children some facts about common garden produce.

Stevens, Janet. ***Tops and Bottoms***. Harcourt Brace and Co., 1995.
Folktale involves a hare and a bear as they plant and harvest vegetables.

Stewart, Sarah. ***The Gardener***. Farrar, Straus, Giroux, 1997.
A series of letters tells of a girl who, when forced to leave the country, takes her love of gardening with her.

Tang, Greg. ***The Grapes of Math***. Scholastic Press, 2001.
Brightly-colored picture book with rhyming verse encourages youngsters to solve math problems in creative and unexpected ways. A note to the reader plus sample solutions at book's end help readers to look beyond the obvious in math.

Titherington, Jeanne. ***Pumpkin Pumpkin***. Mulberry Books, 1986.
A young boy plants a pumpkin seed and after watching it grow, carves it and saves some seeds to plant in the spring.

Tryon, Leslie. ***Albert's Field Trip***. Atheneum Books for Young Readers, 1993.
Albert leads a class from Pleasant Valley School on a field trip to Georgie and Gracie's Apple Farm. There are songs on the bus, a visit to a barn and the orchard, where the children pick their own apples and squeeze them into juice.

Wangberg, James K. ***Do Bees Sneeze? And Other Questions Kids Ask About Insects***. Fulcrum Publishing, 1997.
Fascinating facts to over 200 questions collected from classroom visits and correspondence with elementary students. Answers are easy to understand; includes ideas for projects encouraging further investigation.

Watson, Clyde. ***Applebet an ABC***. Farrar, Straus and Giroux, 1987.
Short verses introduce scenes from a fair in which letters of the alphabet figure prominently.

Watts, Barrie. ***Tomato***. Silver Burdett Press, 1989.
Describes in simple text and illustrations how a tomato develops from a blossom in the spring to a ripe fruit in the summer.

Wolfman, Judy. ***Life on a Goat Farm***. Carolrhoda Books, Inc., 2002.
This non-fiction colorful picture book with simple text describes life and work on a dairy goat farm.

Ziefert, Harriet. ***A New Coat for Anna***. Knopf, 1986.
Anna visits the sheep that provide the wool and all the people involved in making her winter coat.

APPENDIX B: Resources

Garden Mini-Grants

Organization: Alameda County Waste Management Authority
http://www.stopwaste.org/sc-garden.html
Roberta Rankin
777 Davis Street, Suite 100
San Leandro, CA 94577
Phone: (510) 614-1699
Email: rrankin@stopwaste.org

The Garden Block Mini-grant makes available $1,500 for garden projects that incorporate resource conservation, recycling, composting, vermi-composting or education as elements of a garden project. Applicants will receive training, a compost bin and/or vermi-compost box, a video and other training materials.

Ag in the Classroom

Organization: Ag in the Classroom
http://www.agclassroom.org/
U.S. Department of Agriculture
Room 3534-South 1400 Independence Ave. SW
Washington, DC 20250-2251
United States
Phone: 202-720-7925

This is an initiative to provide information about the role of agriculture in society to K-8 students and teachers. Sponsors national conferences and supports programs in all states and Canadian provinces. Web site has many useful resources.

Nutrition Education and Training (NET) Program

Organization: California Department of Education
http://www.cde.ca.gov/nsd/
560 J Street, Suite 270
Sacramento, CA 95814
USA
Phone: 916-322-4792
FAX: 916- 323-4311

NET is a health promotion and disease prevention program targeted to all children that focuses on the child's environment to empower children and families to have access to

nutritious foods, make wise food choices, and embrace a healthy lifestyle. The department's "Garden in Every School" program is coordinated by NET, which distributes a school garden information packet on request and awards competitive garden-enhanced nutrition education grants annually.

Old Farmer's Almanac

Organization: Old Farmer's Almanac
http://www.almanac.com/
Greg Platz
P.O. Box 520
Dublin, NH 03444
Email: gregp@yankeepub.com

This Web site has a wealth of information on weather lore, gardening tips, and more. *The Old Farmer's Almanac* publisher has offered to send a copy of this and *The Gardener's Companion* to educators willing to share how they incorporate the materials into their classrooms and curricula. To receive a free copy of both books (while supplies last), send a request to the attention of Greg Platz at the postal or e-mail address listed. Be sure to include your name, address, and grade level.

Free Seeds (vegetable, herb, flower)

Organization: America the Beautiful Fund
http://www.freeseeds.org/
1730 K St. NW, Ste. 1002
Washington, DC 20006
Phone: (202) 638-1649

This nonprofit organization distributes free seeds to communities, organizations and educational programs. To request up to 1,000 seed packets for your garden project, send a letter with your name, school or project name, address, and phone, and a short description of your project. Enclose a check for $12 to cover postage and handling for the first 100 seed packets and $5 for each additional set. Specify the number of vegetable and flower packets you'd prefer. .

Teaching the Importance of Agriculture for the Benefit of Everyone

Organization: California Foundation for Agriculture in the Classroom
http://www.cfaitc.org/
2300 River Plaza Drive
Sacramento, CA 95833
USA
Phone: 916-561-5625
FAX: 916-561-5697

This organization sponsors projects for teachers and students to integrate basic agricultural information into existing curriculum areas. *A Teacher Resource Guide* of educational materials about agriculture includes information on lesson plans and California fairs; a book list; and recommended readings for K-8 history/social science classes, videos, and more. It sponsors teacher training, school "ambassador," and "Adopt-a-Farmer" programs. A seasonal newsletter is available free of charge.

Healthy Kids Resource Center

Organization: California HealthyKids
http://www.hkresources.org/c/@0T6YVHRrkP0Oo/Pages/index.html
313 West Winton Avenue, Room 180
Hayward, CA 94544
USA
Phone: 510-670-4581
FAX: 510-670-4582

Healthy Kids Resource Center offers health, nutrition, and agriculture/gardening resources and curriculum to schools free of charge. Audiotapes are available from the 1995 American Horticultural Society's Youth Garden Symposium that contain a wealth of information about school gardening. Call to obtain a catalog. (Garden-related resources are in hard copy catalog only.)

School Carton Recycling and Composting

Organization: Aseptic Packaging Council
http://www.aseptic.org/School%20Recycling%20and%20Composting.htm
2111 Wilson Boulevard, Suite 700
Arlington, VA 22201
Email: jlofton@mrss.com

Juice boxes and milk cartons are fixtures in every kid's lunchbox and school cafeteria. This site, published by the Aseptic Packaging Council, offers information on starting and

maintaining carton recycling or composting projects, as well as free curriculum and support resources.

Ecoliteracy News

Organization: Center for Ecoliteracy
http://www.ecoliteracy.org/pages/news_newsletter2.html
2522 San Pablo Avenue
Berkeley, CA 94702
Email: newsletter@ecoliteracy.org

Drawing on the real-world experiences of San Francisco Bay area school children, *Ecoliteracy News*, the quarterly newsletter of the Center for Ecoliteracy, showcases the use of local ecological and socio-cultural settings as a framework for developing sustainable communities. *Ecoliteracy News* features news and stories regarding assessment of garden projects, resources and an online Conference Calendar for Educators. By sharing these stories, the Center hopes to encourage more dialogue about the effectiveness of place-based education. Please visit the Web site to access the free newsletter. To receive future newsletters, please contact the e-mail address above`

APPENDIX C: Additional Web Resources

http://www.kidsgardening.com/
National Gardening Association
Connects children and their families with other schools with similar gardening interests.

http://www.lifelab.org/
Life Lab Science Program
Life Lab has been working in the field of science and environmental education for over twenty years, serving teachers in the Monterey Bay Area and Greater Bay Area Regions, as well as throughout the nation.

http://www.cde.ca.gov/nsd/nets/g_1.htm
California's "Garden in Every School Program"
The "Garden in Every School" initiative, launched by State Superintendent of Public Instruction Delaine Eastin in 1995, creates opportunities for schools to provide dynamic environments that support student mastery of educational standards. Students who participate in school garden projects also discover fresh food and make healthier food choices, and develop a deeper appreciation for the environment, the community, and each other.

http://www.schoolgrants.org/
Designed for those writing grants for pre-K-12 projects, the site offers advice, sample proposals, a discussion forum, and a state-by-state list of grant opportunities in education

http://www.kidsgardening.com/resources/resource.asp
Our searchable directory features 100 regional and national sources of grant funds. Search by region or go to "select a resource type" and click on the link to grants/funding sources.

http://www.cfaitc.org/Resource_Materials/Resource_Guide/resourceguide.html
http://www.cfaitc.org/Resource_Materials/Resource_Guide/resourceguide.html
The ***Teacher Resource Guide*** is a handy 120+ page reference listing materials to help educators infuse agriculturally–related activities and projects into their existing classroom curriculum. Many of the items are available at minimum cost.

SE06824

U.S. Department of Education
Office of Educational Research and Improvement
(OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

Reproduction Release

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: School Garden Investigation: Environmental Awareness

Author(s): Elizabeth Bundahu-mooney

Corporate Source: Dominican University of California

Publication Date: May 2003

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational commun
documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usual
available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Docume
Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is grant
the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the followi
options and sign in the indicated space following.

The sample sticker shown below will be affixed to all Level 1 documents	The sample sticker shown below will be affixed to all Level 2A documents	The sample sticker shown below will b Level 2B documents
PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY SAMPLE TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)	PERMISSION TO REPRODU DISSEMINATE THIS MATE MICROFICHE ONLY HAS BEEN SAMPLE TO THE EDUCATIONAL RE INFORMATION CENTER.
Level 1	Level 2A	Level 2B
☑	☐	☐
Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g. electronic) *and* paper copy.	Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only	Check here for Level 2B release, perm and dissemination in microf
Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.		

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche, or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature:	Printed Name/Position/Title: Elizabeth Bundschu-Mooney Teacher	
Organization/Address: 132 Oak Manor Drive Fairfax, CA 94930	Telephone: 415-457-1339	Fax: 415-4571399
	E-mail Address: emooney@calparkhs.edu	Date: 5/5/03

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706
Telephone: 301-552-4200
Toll Free: 800-799-3742
e-mail: ericfac@inet.ed.gov
WWW: http://ericfacility.org

EFF-088 (Rev. 2/2001)